



New Datasets for the Arafura Basin

Geoscience Australia Record 2006/06

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For a complete description of directory structure and software requirements please refer to the [readme](#) file

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1. Geoscience Australia
 2. BuryTech Pty Ltd
 3. CSIRO Petroleum
 4. P & R Geological Consultants Pty Ltd



Australian Government
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Executive Summary

The Arafura Basin is a Neoproterozoic to Palaeozoic basin that extends from onshore Northern Australia across the Arafura Sea into Indonesian waters (Figure 1). It is located in mostly shallow water (<220 m) and has been the target of limited petroleum exploration since the 1970s. Nine exploration wells were drilled between 1971 and 1993, with some encouraging hydrocarbon shows and indications. The basin is overlain by the Mesozoic to Cenozoic Money Shoal Basin.

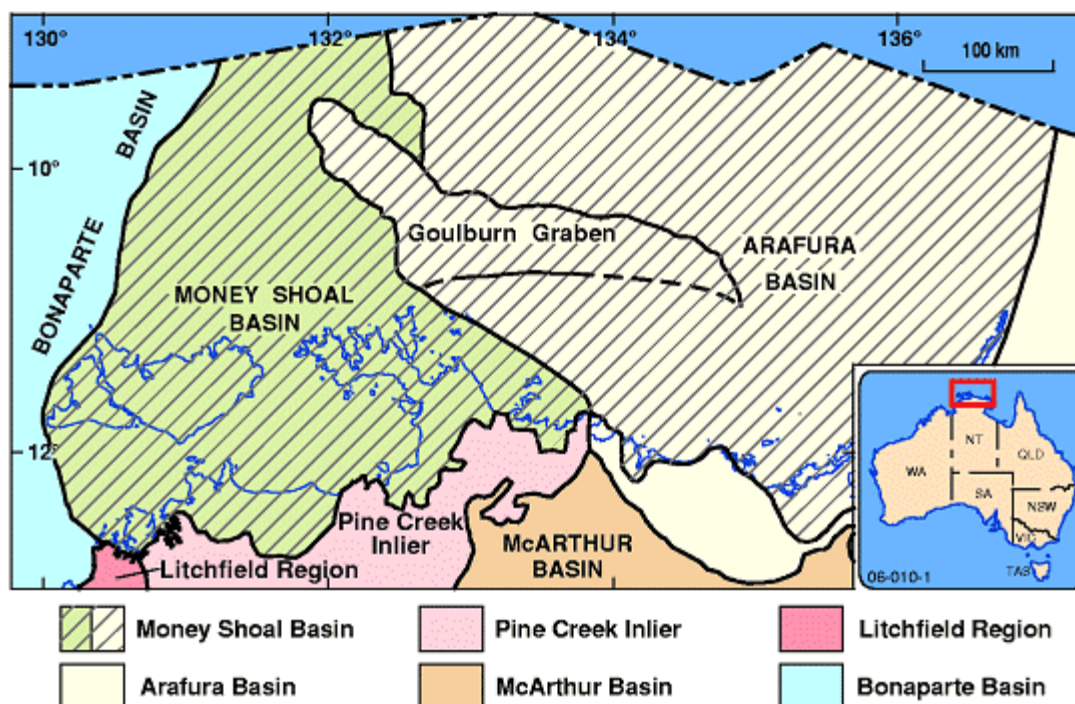


Figure 1 Arafura Basin location map

In 2004-2006, Geoscience Australia conducted a study to investigate the petroleum geology of the region as part of its 'Big New Oil' program. The aim of the study was to enhance the petroleum prospectivity of the Arafura Basin, particularly the northern, undrilled part of the basin, through an improved understanding of basin geology, petroleum systems, timing of events and potential hydrocarbon seepage. This involved a comprehensive review and interpretation of existing available well and seismic data. In addition, new analyses were carried out to improve biostratigraphic control, and to provide improved data on the maturity, organic geochemistry and petrology of potential source rocks. A marine survey to investigate potential hydrocarbon seepage was conducted in collaboration with the National Oceans Office in 2005.

Results of the geological framework study are given in Earl (2006) and Struckmeyer (in prep.) and initial results of the seepage survey are presented in Logan et al (in prep.). This record presents a compilation of a range of analyses and their interpretations that have been undertaken by Geoscience Australia and collaborating agencies (CSIRO Petroleum) and individuals during the course of the study. These new datasets complement existing, open file data available in [Geoscience Australia's petroleum databases](#). The reports reflect the professional opinions of the individual authors and are not necessarily in agreement with the results of Geoscience Australia's recent study as presented by contributors from Geoscience Australia.

References

Earl, K.L., 2006. An audit of wells in the Arafura Basin. Geoscience Australia Record 2006/02

Logan, G.A, Ryan, G.J., Glenn, K., Rollet, N., Hemer, M., Twyford, L. and Shipboard Party, (in prep.)- Shallow gas and benthic habitat mapping, Arafura Sea. RV Southern Surveyor May - June 2005, S282 Post Cruise Report. Geoscience Australia Record. GeoCat No. 64003.

Struckmeyer, H.I.M. (compiler), (in prep.). Petroleum Geology of the Arafura Basin. Geoscience Australia Record. GeoCat No. 63995

Totterdell, J.M., 2006. Basin evolution. In: Struckmeyer, H.I.M. (compiler), (in prep.). Petroleum Geology of the Arafura Basin. Geoscience Australia Record. GeoCat No. 63995.

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Reports

- [Middle Cambrian fauna from the Jigaimara Formation, Arafura Basin, Northern Territory](#) - John R. Laurie (Geoscience Australia).
- [Macrofossils from Petrofina Arafura 1, Goulburn Graben, Arafura Basin](#) - John R. Laurie (Geoscience Australia).
- [Cambrian and Ordovician sediments and biostratigraphy of the Arafura Basin, offshore Northern Territory, Australia](#) - Robert S. Nicoll.
- [Devonian stratigraphy and biostratigraphy of the Arafura Basin, offshore Northern Territory, Australia](#) - Robert S. Nicoll.
- [Palynology report Arafura-1, Goulburn-1 and Tasman-1, Goulburn Graben, Northern Territory, Australia](#) - Robyn Purcell (P & R Geological Consultants).
- [A palynological reconnaissance of new cuttings samples from the Arafura-1, Kulka-1 and Tasman-1 wells](#) - Robin Helby.
- [Thermal maturity evaluation using a combination of FMM and conventional organic petrological analyses for samples from a suite of wells in the Arafura Basin](#) - Neil Sherwood, Nigel Russell and Mohinudeen Faiz (CSIRO Petroleum).
- [Chemical maturity assessment and oil correlation in the Arafura Basin](#) - Christopher J. Boreham (Geoscience Australia).
- [Investigation of hydrocarbon charge in the Cobra-1A, Kulka-1, Money Shoal-1, Tasman-1 and Torres-1 exploration wells, Goulburn Graben, Arafura Basin, northern margin of Australia](#) - Richard H. Kempton and Stephen Fenton (CSIRO Petroleum).
- [Geohistory models of Arafura Basin wells and pseudo-wells](#) - Heike I.M. Struckmeyer, Georgina J. Ryan (Geoscience Australia) and Ian Deighton.

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